

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

**Brian H. Moeckly et al.**

**Serial No.:** 10/726,232

**Filed:** December 1, 2003

**For:** GROWTH OF IN-SITU THIN FILMS  
BY REACTIVE EVAPORATION

**Group Art Unit:** 1751

**Confirmation No.:** 3720

**Examiner:** VIJAYAKUMAR,  
KALLAMBELLA M.

**DECLARATION OF TODD KAPLAN UNDER 37 C.F.R. § 1.132**

**MAIL STOP RCE**  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

I, Todd Kaplan, declare as follows:

1. I currently reside at 115 Horizon Circle, Grass Valley, CA 95945.
2. I received my B.S. in Engineering Physics from the University of Colorado in 1991, my M.S. in Electrical Engineering from the University of Colorado in 1994, and my PhD in Electrical Engineering from UCLA in 2004.

3. I am a listed inventor on U.S. Patent No. 6,527,866 (hereinafter "the '866 patent") entitled APPARATUS AND METHOD FOR DEPOSITION OF THIN FILMS and I am familiar with the devices and methods disclosed therein.

4. I have reviewed a copy of the amended claims being submitted by the Patent Applicant in the above-noted U.S. patent application. The claims are listed in a document entitled AMENDMENT AND RESPONSE TO FINAL OFFICE ACTION.

5. I am familiar with the disclosure contained in the above-noted pending U.S. Patent Application (U.S. Published Application No. 2005-0116204 A1).

6. I understand that the pending claims in the above-noted U.S. Patent Application have been rejected as being obvious over the '866 patent to which I am a listed inventor.

7. The apparatus for making thin films described in the '866 patent includes a reaction zone which is charged typically with an oxidizer. See Col. 8, lines 18-24. Alternatively, the reaction zone may be charged with nitrogen or ammonia instead of oxygen in order to form nitrides. Col. 3, lines 41-43. The reaction zone described in the '866 patent was not, however, intended to be charged with a metallic species. In the '866 patent, metallic species were located in the separate deposition zones (116).

It is my opinion that it would not be obvious to charge a metallic species like magnesium into the reaction zone (118) of the apparatus described in the '866 patent because metallic species were reserved for the separate deposition

zones (116). Metals were deposited using boats of current-heated metal strips, e-gun evaporators, effusion cells, or other physical vapor deposition methods such as sputtering. See Col. 6, lines 23-26. The reaction zone (118) was reserved for gaseous, non-metallic species such as oxides.

8. In the apparatus described in the '866 patent, the metallic species of the superconductor films were located in the deposition zone. Because the metals were deposited using conventional deposition techniques, deposition material monitors such as quartz crystal monitors (QCMs) were needed. See Col. 7, lines 20-43. It is my understanding that the claimed method in the above-noted patent application does not need any deposition material monitors because the metallic species such as magnesium is directly fed into the reaction zone. At least for MgB<sub>2</sub>, there is no need to monitor deposition rates because the reaction of magnesium with the deposited boron is self-limiting. This is an advantage over the device and method described in the '866 patent.

9. It is my opinion that the methods recited in the claims being submitted with the AMENDMENT AND RESPONSE TO FINAL OFFICE ACTION are not obvious over the disclosure contained in the '866 patent.

The undersigned understands that willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. § 1001) and may jeopardize the validity of the application or any patent issuing thereon. All statements made of the undersigned's own knowledge are true and all statements made on information and belief are believed to be true.

Executed this 16 day of July, 2007 at Grass Valley, California.



Todd Kaplan